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LECTURES ON THE EXPLORATION AND TREATMENT OF DISEASES OF THE CHEST.

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LECTURE VI.—*Cough—Expectoration.*

COUGH is produced in diseases of the thorax from two causes—the accumulation of liquid in the bronchial tubes, and the sympathetic irritation caused in the larynx by pain or stricture in the chest. In the former variety, the cough is useful, and is productive of relief to the patient, in the latter it is often a cause of aggravation of symptoms. The true excretory cough occurs only in the diseases of the bronchial mucous membrane, and of the parenchyma of the lungs which directly communicate with this membrane. The irritative cough takes place not only in the earlier stages of inflammation of the bronchial tubes, and of disorders of the parenchyma and serous membranes which do not communicate with the bronchi, but it is also a frequent dependent upon diseases of the heart, and even of the stomach, and in many cases is caused by a disordered condition of the nervous system, which is totally foreign to the chest. You perceive, therefore, that the causes of the irritative cough are extremely various, and that the cough itself, in many cases, throws but little light upon them.

I shall now attempt to define to you the varieties of cough and of the expectoration, which are closely connected together.

The dry or irritative cough.—The term irritative may properly enough be applied to this variety, which is nothing but a short and quick cough,—that is, a short and rapid expiration, which is the essential character of cough. The term dry cough is so well known as the designation of this variety, that it is universally understood. It is followed by no real secretion; there is sometimes an expectoration of the small quantity of mucus, which is naturally found in the fauces and bronchi. The diseases of the lungs in which it occurs are the early stages of phthisis, and certain cases of serous inflammation. It is also an attendant upon the elongation and inflammation of the uvula, and may cease abruptly after its removal. In diseases

of the stomach and bowels, and in affections of the mucous membranes of the abdomen as well as in peritonitis, the same variety of cough is observed. Indeed, you may generalize the subject much farther, and say that the short, dry cough, is the most frequent form of irritative cough, and the most persistent; and that, although in itself it is of no moment, it is often the sign of a commencing disease of the thorax. On the other hand, your knowledge of the circumstances which give rise to a dry cough, must lead you to look for other causes of it than the diseases of the chest,—and after your physical examination has taught you that there is no important lesion in the thorax, your next object will be to examine other portions of the body, and ascertain whether some disease of the abdominal viscera, or a mere nervous irritability, will not account for this cough.

There is another variety of cough which is not very unlike the dry; that is, the sonorous cough: this is always loud, and at times very ringing and clear, so as to be heard at a considerable distance from the patient. This variety belongs to many morbid conditions: it is found in the chronic dry catarrh, but chiefly in the earlier stages of ordinary acute catarrh, before secretion has commenced. In its most marked degree, however, the sonorous cough is not indicative of diseases of the lungs, but of many and various conditions of this morbid nervous action; and, as you may readily suppose, it is most apt to occur in young girls, who are much more subject than any other class of individuals to diseases attended with deranged nervous action. Hence the cough is very irregular in its indication; and although when it is of recent occurrence and short duration, it is nearly always connected with disorder of the bronchial tubes,—yet, when chronic, it is most frequently either a true nervous cough, or an attendant upon chronic diseases of the larynx, especially those in which there is a morbid growth which projects into the rima glottidis, and acts as a constant cause of irritation. This cough is therefore rather a matter which must exercise

your sagacity, than a correct indication of any special disease.

The *suppressed cough* is, like the dry, a short cough; but it is checked by a voluntary effort of the patient; for as the act of coughing is, to a certain extent, independent of the will, a patient may arrest the violent expiration if he be aware that it will cause him much pain; hence the cough becomes suppressed in serous inflammations of the chest, where there is little or no secretion from the bronchi, and the pain is much more considerable than in ordinary cases of disease. In pertussis, the fear of exciting a violent fit of coughing will frequently cause it to be suppressed. In the early stages of pneumonia there is very little secretion into the bronchi; hence the necessity for cough and expectoration is but slight, while the accompanying pleuritic inflammation acts as in cases of simple pleurisy, and suppresses the cough.

The *laryngeal cough* is various in its character; still, as it depends upon thickening or ulceration of the larynx, the tone of the cough is stridulous and somewhat stifled; at times, almost whistling. In the advanced ulceration of the larynx, which constitutes laryngeal phthisis, the cough is alternately loud and whistling, and again almost aphonic. This variety of the cough is attended with a peculiar alteration of the voice.

The *loose, or mucous cough*, is well known as the cough which attends the resolution of acute bronchitis, and is therefore of favourable prognosis in this disease; it is connected with a free secretion into the bronchial tubes, and is of course accompanied by mucous rhonchus, and generally by expectoration. As there are many diseases in which there is an abundant liquid secretion into the bronchial tubes, the mucous cough is very far from being confined to bronchitis; it occurs also in the advanced stages of phthisis, in the third stage of pneumonia, hæmoptysis, &c. Hence, like most of the varieties of cough, it becomes useful as a sign, chiefly when combined with other symptoms.

In certain cases of large cavities from phthisis or gangrene, the cough sometimes is not merely mucous, but it is loud and rattling; that is, as it is caused by the free agitation of the air in a large cavity, it partakes of the characters of the cavernous respiration, and differs in

being much louder and more gurgling from the ordinary mucous cough.

The *spasmodic cough* is the last variety of cough which is sufficiently characterized to admit of a separate description. The type of this variety is found in pertussis, in which disease the cough is more decidedly spasmodic than in any other. But there are numerous other cases of disease, especially lesions situated about the larynx, which are attended with a severe cough, returning in paroxysms, and sometimes accompanied with a noisy, whooping inspiration. Although it is most frequent in obstructions about the larynx and upper part of the trachea, the enlargement of the bronchial glands will often give rise to it, and the peculiar cough is sometimes a valuable diagnostic sign in an affection which is always obscure. In certain cases of asthma the cough recurs in paroxysms which are often attended with a noisy inspiration. In general terms, you may state, cough does not bear an accurate relation to the extent of the pulmonary lesion; frequently the cough seems to be almost in inverse proportion to the mass of parenchyma involved in the disease. For if a large portion of the lungs be rendered unfit for the performance of the respiration, the patient cannot make the forcible expiration necessary to produce a decided cough. It is rather a sign of laryngeal and tracheal irritation, than of deep-seated pulmonary disorder. The cough is of less value as a sign in the aged than in those enfeebled by disease, or than in other patients, for in them it may be wanting throughout the whole course of a grave disease: the same remark is applicable to young children, who cough much less frequently than those who are older. In diseases of the lungs in general, the cough may completely cease if the brain becomes seriously involved; for a cerebral disorder renders a patient unconscious of the irritation, which, under ordinary circumstances, would give rise to severe cough. Secondary inflammation of other organs, as the stomach and bowels, sometimes produce a similar effect, but to a much less degree: this is in accordance with the general pathological law, that a severe intercurrent inflammation will obscure, and, to some extent, replace the symptoms of the primitive affection.

THE EXPECTORATION.

The expectoration is less frequent in diseases

of the chest than the cough; but its signs are more definite, and in some cases they afford very accurate indications of pulmonary disease. As a general rule, the sputa come from the lining membrane of the bronchial tubes, and form cavities or softened portions of the parenchyma, which communicate directly with the bronchi. Hence, their value as positive signs is chiefly confined to the diseases which affect the mucous membranes of the chest. The sputa, however, may contain other liquids besides the ordinary secretions of the mucous membranes, such as blood, tuberculous and calcareous matters.

The secretion of liquids in the bronchi is necessarily independent of the will, but the expectoration is a voluntary act. It is performed imperfectly when a person is averse to making the necessary muscular exertion, on account of the pain it may give him, or other reasons; there are no sputa when the feebleness of the patient prevents his making an effort. For similar reasons, children below the age of six years do not expectorate; they do so but rarely until the age of puberty. In very old people the expectoration is rare, and not proportioned to the extent of the disease.

When the sputa are not copious, they are chiefly expectorated in the morning, on waking from sleep, during which they accumulate in the bronchi. When the sputa are copious, but the expectoration causes pain, they are also retained in the lungs until a paroxysm of coughing comes on, and they are discharged in large quantities.

Except in the cases above mentioned, the sputa are rarely wanting during the whole course of a disease, but they do not usually assume their characteristic appearance until the disease is sufficiently advanced to be recognized by the more certain physical signs. In some exceptional cases the sputa are pathognomonic, when the physical signs are doubtful, on account of the remote situation of the lesion or the state of the surrounding tissue.

1. *Of the quantity of the expectoration.*—It is small when it does not exceed a wine-glassful in the twenty-four hours; moderate, when from two to six fluid ounces; large, from six ounces to a pint, and very large if more than a pint. In descriptions of the sputa, it is advisable to state the quantity.

2. *Of the colour.*—The saliva and the mucus

of the bronchial tubes are transparent; and may be more abundant than usual. A higher, or rather more prolonged degree of inflammation of the bronchial mucous membrane, gives a whitish colour to the sputa, if the catarrh pass into resolution; or, if it assume a chronic form, the sputa are yellowish, and frequently of a greenish tinge, and altogether opaque. In acute inflammations of the air-vesicles and of the minute bronchial tubes, the sputa are at first transparent and colourless, but soon become tinged of an orange hue, or they are rust-coloured or of a bright scarlet colour. In inflammations of the lungs, with great prostration, the sputa are brownish, of a mahogany colour, or like that of stewed prunes.

3. *Consistence, and chemical composition.*—In general, the sputa, if colourless, are thin and very liquid; those that are yellow and opaque, are thick, and flow less easily. The shining transparent sputa of pneumonia are more viscid than any other, are often heaped up in the centre of the cup, and adhere strongly to its sides. In one variety of chronic catarrh, and in some affections of the tonsils, the matter expectorated is very small in quantity, and almost solid. The sputa frequently consist of two parts, one more solid, and the other nearly of the consistence of water. If much air be mingled with the sputa, they are light and frothy. The chemical nature of ordinary bronchitic sputa scarcely differs from that of the healthy mucus of the bronchial tubes, but if the inflammation be more advanced, the sputa are more opaque, and become more albuminous. The increasing thickness of the sputa is a sign of a tendency to resolution in acute bronchitis, which is but slightly influenced by the mucous expectoration of its earlier stages. When pus is mixed with the mucus, the consistence is immediately increased; the thick pasty sputa which occur in advanced stages of phthisis, in which the softening is very rapid, are very consistent, but adhere together less intimately than the sputa of pneumonia.

4. *Form.*—When the sputa are composed of simple mucus from the bronchial tubes, they run together, and form a mass which is perfectly homogeneous,—and when they become albuminous, they offer no peculiar form, but are generally composed of two parts—one consisting of the whitish opaque mucus, which, in the form of shreds, is diffused through the

mass of the liquid, and the other more transparent. In some cases of bronchitis, especially of the chronic varieties, in which the sputa are more albuminous than in any other, the matter is moulded into the form of the smaller bronchi, and is expectorated in little cylinders, which are diffused through the secretions of the larger tubes. The viscid, transparent sputa of pneumonia, blend together perfectly well, and form a mass which is with difficulty separated into smaller parts; and the sputa, both of the early and later stages of this disease, are so nearly similar to those of different stages of bronchitis, that they can scarcely be distinguished from them. The form assumed by the expectoration of phthisis is similar to that of bronchitis in its early stages: after softening has been completed, the sputa are moulded in the cavities, and form irregular, rounded masses, with loose cottony edges; these constitute the nummular sputa; when the softening is very rapid, the sputa run together, and lose their nummular form. The sputa, in gangrene of the lungs, retain no peculiar form, but vary according to the consistence of the matter in different cases of the disease.

5. *Odour.*—Transparent sputa are without decided odour; the thick, yellow liquid has generally a faint, nauseous smell, which is very marked in cases of phthisis. Gangrene of the lungs is distinguished by a peculiar fœtor, sometimes gangrenous, at other times resembling the smell of moist plaster. Occasionally, a variety of chronic catarrh and of tuberculous phthisis, in their advanced stages, are attended with fœtid expectoration.

Of the foreign matters mingled with the secretions of the bronchial tubes.—Pus is often intermixed with the mucus secreted in bronchitis, phthisis, and the latter stages of pneumonia, when the sputa are said to be mucopurulent. Sometimes a portion of the pus is uncombined, and sinks to the bottom of the mass. Blood may be intimately combined with the sputa, as it is in pneumonia, when it communicates a general rusty or reddish tinge to them; or it may be mixed in streaks with the mucus, and still retain its florid red color; or, lastly, it may be unmixed with the bronchial secretions, when it constitutes hæmoptysis. The tuberculous matter may sometimes, though rarely, be detected in the sputa under the form of minute yellowish opaque grains,

not often exceeding the size of a pin's head; this appearance coincides with the softening of the tubercles. Calcareous matter is sometimes, though rarely, observed when the tubercles are dry and contain much of the salts of lime. Portions of gray or dark pulmonary tissue have also been expectorated, after separation from the adjacent tissue. In cases of jaundice or pneumonia, complicated with disease of the liver, the sputa are sometimes tinged with bile. I have seen the expectoration composed almost entirely of pure bile from a fistulous opening between the liver and the lungs, following a wound of these organs.

I have confined these remarks on the expectoration chiefly to the text of a short work on physical diagnosis which I published a few years since. They might be much extended; but as the subject is one to which I shall be obliged frequently to recur when speaking of individual diseases, I do not wish to annoy you with unnecessary repetitions. Still, it is essential for you to acquire some idea of the general characters of the expectoration. The best method of examining the sputa is to direct the patient to spit in a white or transparent vessel; a common tumbler will do well enough for this purpose, and then inspect them within a few minutes after they are discharged.

The chemical analysis of the sputa has thus far led to few or no practical results; for the characteristic distinctions between the various forms of mucus, albumen, and pus, are extremely slight. Indeed, it is not necessary for you to investigate, or rather to attempt to investigate, these slighter differences in the expectoration, which were at one time regarded as important. Amongst these, are the numerous tests between pus and mucus, which were sought in order to decide upon the distinctive characters of phthisis and catarrh; all these were found more or less fallacious: the best are the most simple,—that is, the yellow, purulent colour of the expectoration, when pus is mixed with the mucus, for it is rarely found in a separate state. This very admixture is one of the reasons which must make it impossible to discriminate in all cases, as to the mucous or purulent character of the expectoration. The whole subject is now placed in its proper light: the expectoration furnishes us with a most valuable secondary means of diagnosis, but one

less important than many other methods of investigation that have now come into general use.

There is another class of symptoms which may be almost classed among the local signs of thoracic diseases,—that is, the mode in which the movement of the chest is performed during the act of respiration. In reference to this part of the course I shall content myself with quoting the observations contained in the work to which I have previously alluded. You will better understand their value by a reference to the numerous illustrations which I give you on this subject.

ON THE MOVEMENT OF THE THORAX.

In health, the act of inspiration is performed partly by the elevation of the shoulders and ribs, and partly by the depression of the diaphragm. The passage of the air through the nostrils does not cause them to dilate evidently. When the respiration becomes difficult, the different muscles, whose action concurs in respiration, act irregularly, and much more forcibly than in a state of health. When there is dyspnoea, without pain in any part of the thorax, all the muscles concerned in respiration act with increased energy. The nostrils dilate widely, the shoulders and ribs are forcibly elevated, and the diaphragm depressed. In acute diseases, the degree of the dyspnoea is nearly commensurate with the extent of the pulmonary affection. In chronic diseases, this is by no means the case. There are even some instances in which there is extreme dyspnoea, but no appreciable lesion of the lungs. When there is acute pain in the sides of the thorax, or at the diaphragm, from inflammation of the serous membranes, the parts of the chest nearest to the inflamed pleura move less than they do in a state of health. The motion becomes free as soon as the pain subsides. If effusion of liquid occur into the pleura or the pericardium, the motion of the ribs at the corresponding part is impeded by the mechanical distension, though there be no acute pain. When the liquid is absorbed, and false membranes unite the two surfaces of the pleura, the dilatation of the diseased side is always imperfect. The diminished motion of the side of the chest, most affected in phthisis, depends upon the adhesions produced by the frequent inflammations of the pleura.

The number of the inspirations is generally from twelve to sixteen in the minute; but when the lungs or the pleura are much inflamed, the inspirations may increase to thirty or forty; and, when the disease is extremely violent, the number may be as high as sixty or seventy. This extreme frequency is most remarkable when all the serous membranes of the chest are inflamed at the same time. In acute diseases, the frequency of the inspirations is at first nearly proportioned to the violence of the affections; when they have lasted a certain time, the patient seems to accommodate himself to a diminished supply of air, and breathes less frequently. The respiration of children affected with diseases of the chest is very frequent, especially when the lobular pneumonia has extended to a large portion of both lungs. When the extreme frequency of the respiration in acute diseases has ceased, the inspiration remains more hurried than usual; sometimes it is performed in as short a time as the expiration—after which a pause ensues. In health, the time required for the inspiration is twice as long as that of the expiration, both in children and adults.

FOREIGN CORRESPONDENCE.

LETTER FROM M. VERNONIS.

No. III.

The Late Concours for the Chair of Internal Pathology in the School of Medicine of Paris.

PARIS, 27th April, 1840.

To the Editors of the Medical Examiner.

THE month which has just elapsed has witnessed an event of considerable importance in the Medical School of Paris. A titular professor of internal pathology has been named at the close of a public *concours*, which had been prolonged for four months. Few things excite more lively interest in the capitol than a *concours* for one of the chairs of medicine. The number of the competitors, their relative ability and influence, their connections both with society and with the instructing body actually in power, which are so many isolated motives, so many different elements, that each one brings into play according to his energy and capability,—all contribute to form a subject of great interest, and agitate not a little the medical world. In fact, the result of this solemn

contest is fraught with many important consequences: it places in one of the best chairs of the whole range of medical education, the competitor judged most worthy to transmit and develop the immense scientific budget designated under the name of pathology; it opens to the conqueror a share in the reputation justly enjoyed by our faculty in neighboring nations; to say nothing of a point which some of our great men duly appreciate—the comfortable pecuniary as well as scientific position which the successful candidate attains. Never at any other period were the competitors more at their ease, nor did they enjoy a more complete freedom of opinion and of doctrine. The school, to enter which was the object of their ambition, can no longer be characterized by the unity of its instruction, the uniformity of its principles, and harmony of its doctrines. Every member of it now looks at science after his own fashion. The Hôtel Dieu is the antipodes of la Charité, and wide are the limits which separate the clinique of the faculty from the chair of general pathology. While the School of Montpellier is endeavouring to revive its ancient devise, so long obscured by the éclat of the pathologo-anatomical glare of Paris; while the School of Strasburg remains faithful to its traditions of pure anatomy, and avails itself, through its neighbourhood to Germany, of the researches in physiology, natural philosophy, and medical literature, cultivated in that country, our faculty, our School of Paris is every day separating more and more its bundle of reeds, opening its doors to every wind of doctrine, and becoming the representative, not so much of a distinct body, as an assemblage of every shade of opinion known in scientific Europe. This state of things has its advantages as well as its inconveniences. It was, therefore, interesting to study in a public *concours*, from the character of the efforts, of the questions assigned, and the manner in which they were solved, both the spirit of the judges and the competitors. As regards medical pathology, it was, so to say, to collect up to a certain point the contemporaneous history of the progress, the development, and the tendencies of this branch of the art. From the details into which we are about to enter, and the exact enumeration which will be given of the circumstances attending this *concours*, your readers will be enabled to judge, better certainly than by mere

description, what is just now the School of Paris, its capacities, and its prospects.

Judges of the Concours:—From the Professors, MM. Andral, Fouquier, Chomel, Duméril, Trousseau, Cruveilhier, Paul Dubois, Gerdy—Supplementary, MM. Roux, Marjolin.—From the Academy of Medicine: MM. Roche, Bally, Honoré, Rayer—Supplementary, M. Bricheteau.

Competitors:—MM. N. Guillot, Dalmas, Legroux, Requin, Hourmann, Cazenave, Piorry, C. Broussais, Gilbert, Dubois d'Amiens, Gendrin, and Combette.

Requisitions:—1. A written composition; the same for each competitor. 2. A lecture of an hour's length, after twenty-four hours' preparation, upon a subject selected by lot. 3. A lecture of an hour's length, the same for two candidates, after three hours' preparation, upon a subject likewise selected by lot. 4. A printed thesis. 5. A discussion of this thesis, successively by four competitors. 6. Examination of the anterior claims of each candidate.

Were we to look at the *concours*, and the means by which it is carried into execution, simply as they profess to be themselves, and divested of every manœuvre and dishonourable intrigue, we should certainly find in the conditions proposed every guarantee for the attainment of the desired object. The candidate is thus enabled to bring forward and display his erudition, style, and science, in the written composition; his judgment, logic, medical spirit, and elocution, in the oral efforts; his views of pathology, his facility of disposing of his material, arranging facts, and deducing conclusions, in his thesis; finally, as regards his anterior claims, from his past character, his future usefulness and success might in a great measure be anticipated. But we live in an age in which the most sacred things have been blighted, and the noblest institutions diverted from their end. Hence we need not be surprised to find, that in the progress of the result of this *concours*, human passions force their way in to play their accustomed part, and that in the struggle for the prize, elements of competition are brought to bear, altogether perverting the original wise intentions of legislation.

Without predilection or bias in any direction, I have been an attentive observer of the contest, and propose to offer a rapid analysis

of it to your readers. The question presented for written composition was, "*On Fever.*"—Undoubtedly, few subjects could have offered so many difficulties in solution; but, on the other hand, few could afford scope for so much development, or so many important considerations, including, so to say, the entire history of the progress and vicissitudes of medicine. The different epochs of the science all offered themselves for review, with their various systems, modified with the successive experience of ages, until we came to consider fever as something else than a vague word without positive definition. Again, was to be shown the actual point of connection between existing opinions and the views which have prevailed in medicine, from the time of Hippocrates to our own. From these views were to be deduced positive conclusions, if based upon facts, or the expression of doubts, if such were the legitimate result of such a discussion of the premises. Here, then, was an ample field opened to the candidates for the display of solid erudition, accurate powers of analysis, just appreciation of the merits of the past and present, with knowledge of fever derived from the bedside of the patient, considering it as the basis of the other phenomena of disease,—such, I say, was the field opened on a subject which, in the hands of Pinel and Broussais, has in our days shaken the medical world to its very centre. The liberality of the judges was shown in the selection of a question so very general; and amply did the competitors avail themselves of this liberality. From this first essay, it was not difficult to seize the aspect of the *concours*, to classify the combatants, and see under what banners they fought. Thus, MM. Legroux, Guyot, Cazeneuve, C. Broussais, Dalmas, became the champions of the anatomical school, liberally understood; M. Gendrin showed himself a pure anatomo-pathologist, and gave an analysis of the researches published by him on this subject. And M. Gibert, alone, raised the standard of Hippocratic medicine, and, it must be confessed, acquitted himself very skilfully of this difficult task. The other competitors did not travel out of the common path; and from their first steps, occupied but an insignificant space in the arena.

The second trial consisted in the delivery of a lecture an hour long, upon a subject selected

but a day previous. This trial is unquestionably one of the most important. Every one has a fair opportunity of preparing himself; all the sources of erudition are open to him; and what he shows himself to-day, he will probably be for the future. Here all his qualities unfold themselves; the bent of his mind, the character of his judgment, his talent for exposition, for eloquence; his delivery, his gestures—are all brought before the public eye. As if he were already professor, he delivers from his chair a lecture, for the preparation of which he has had ample time: from the history of the science he has been able to *select* whatever he deemed of capital importance; he has had leisure to *classify* his ideas, so as to develop them with arrangement and clearness; in a picture of just limits, he may have arranged his colours in harmonious lines and fair proportions; finally, if he be endowed with a voice of eloquence and persuasion, he may at once captivate and arrest the attention of his auditory. It was, then, important to display, in this trial, not a fatiguing erudition, and too spiritual a phraseology; for erudition in this case was at the command of all, and wit is not science, in medicine. Unfortunately, among the candidates were found some men most unluckily erudite, and some would-be wits. By the rest, the trial was in general but feebly sustained. And yet the judges had been prodigal of noble and great subjects. Your readers will be able to perceive this from the following enumerations: The candidates were called upon successively to discuss,—pus and suppuration; the sympathetic phenomena of diseases; rheumatism and gout; paralysis; convulsions; nervous affections; eruptive fevers in general; tubercles; puerperal fevers; delirium; vomiting; and, lastly, the entozozia. Certainly, the judges deserved well of science, in thus proposing a series of questions, all of about the same importance, and all so put as to be susceptible of being treated in a general manner. I have said that the trial was but feebly sustained. In fact, among the candidates there were no minds of high generalizing powers; no minds that could seize with clearness all the bearings of a subject, so as afterwards to present a rapid and intelligent analysis of it. There are in medicine many minds of descriptive powers; in it, as in natural

history, description has its advantages and its degree of merit; but it is very inferior to that high power of synthesis, which looks from high upon facts scattered and without limits, and collects them together, weighs them, compares them, and from apt collocation of them, deduces those general laws which become the expression of all the great truths of science. We must repeat, that but few of the candidates understood the extent of the requisitions upon them, and the just importance of the task assigned them. We may, however, mention the lectures of MM. GENDRIN, upon *paralysis*; DALMAS upon the *entozozaria*, and LEGROUX upon eruptive fevers. MM. PIORRY, upon *tubercles*, and GIBERT, upon *nervous affections*, showed their knowledge of the qualifications necessary in a professor of pathology.

(To be concluded in our next.)

FOREIGN SUMMARY.

ANDRAL'S LECTURES ON THE ALTERATIONS OF THE BLOOD.—NO. I.

General and preliminary observations—Importance of attending to the state of the blood—Nature of the alteration which this fluid undergoes—Such change affects its quantity or its quality—Changes of quantity—Phenomena attending plethora and anemia.

IN those sciences which are called natural there is no primitive fact such as may be found in some others. Geometry is based upon the law of gravitation. In our study of the natural sciences, it is sufficient to analyse the facts, to classify, to bring them together, or separate them, as may be necessary: for this purpose different methods have been employed. Some, supposing the existence of a primitive principle, endeavoured to arrive at it, and sought for it in the material, or the dynamic, state of life. In pathology, it has been sought for in the solids and fluids; at one time, incitability, named also excitability, or the vital forces, was considered as its seat. Others have attempted to study the laws of the vital forces, as they would those of gravitation;—the attempt has been fruitless, for we can find no primitive fact from which the particular ones can be deduced. In the actual state of science, we cannot trace any general fact which will give us a key to all the others, as gravitation gives us the solution of all the facts in geometry.

Many persons at the present day reject any researches on this subject, and merely study the facts themselves; such are the empirics or exclusives, who, seeing the errors of our predecessors, will not inquire into the causes of effects. All those who, at the present day,

give themselves up to the study of these sciences, admit a succession of facts drawn from the different systems of fluidism, solidism, &c., and recognise those which have stood the test of ages, while they reject those which are erroneous; and I am willing to admit, that all the doctrines that have swayed the minds of men do contain some one fact or other, although the conclusions drawn from them may have been false. This doctrine is at present much in vogue, and by it we explain one fact by solidism, another by fluidism, and another by vitality. At present every body is eclectic, while twenty years ago it required no small degree of courage to be eclectic, or fluidist, or to maintain that the alterations of the blood had any influence over diseases. I found that the theory of solidism could not explain a great number of facts, and I sought for their solution in the different theories of fluidism, &c., and thus I became eclectic, whilst almost all were still influenced by the doctrines which then prevailed.

We have to study the forces which have been created with matter, and the influence which these forces exercise over it. Are the forces which produce the phenomena in organized bodies identical with those which produce them in unorganized, or bodies invert? Although organized bodies possess functions peculiar to themselves, we are not to conclude from hence that they do not possess properties which belong also to matter in general. We have two orders of phenomena: one produced by laws which regulate matter in general, the other by laws which regulate organized matter. Excitability is a special fact, but phenomena purely chemical and physical also take place in our bodies, as many of them are explained by weight, porosity, &c. We therefore admit two kinds of forces or phenomena in the living body,—one which is peculiar to organized matter, the other which is common with the physical laws. Our predecessors have attempted all that has been discovered within our time, but they were exclusives—some being chemists, others physiologists, others mechanics, hydrodynamists, &c. What marks our era is not the number of discoveries, but that we take into consideration the facts which have been collected in past ages, without being exclusives, chemists, solidists, &c. and resuming the labours of our predecessors, we are enabled to improve upon their ideas by the greater lights furnished to us by the sciences of the day. Philosophical doubt is useful to science, but scepticism is fatal to it. Sceptics, although disbelieving the testimony of others, are very credulous as to what they themselves observe, for it is one of the principles of our mind to search for causes of effects produced, and when we meet with a fact to endeavour to trace it up to its origin. Before the cliniques had afforded the advantage of studying diseases from nature, the student

was obliged to acquire his information from books, and thus was thrown into practice without having ever seen those affections which he was called upon to treat. But now that the hospitals have been thrown open, and that clinical instruction gives every facility for studying diseases from nature, the student too often thinks that he may dispense with reading; but let me tell you that there can be no good observation without reading, and the number of facts which any one person can observe can never be sufficient to make him acquainted with medicine. On this account, I strongly recommend you to read both the ancient and modern authors.

I shall treat this year in particular of the diseases produced by the alterations of the blood, and then of those of the nervous system.

The alterations of the blood played an important part in the old systems of pathology. The solids were represented by the containing parts, the fluids by the parts contained, and the movements by the vital forces; the ancient Greeks clung to these opinions, being exclusively and successively attached to the doctrines of fluidism, solidism and of the vital forces. Galen proved that these different sects should be united into one, as laid down by Hippocrates. During the seventeenth and eighteenth centuries, the humoral doctrines prevailed, but at the beginning of the present they lost ground; their insufficiency being felt, people were obliged to have recourse to solidism, and among the latter is found Bichat, who, although a solidist, was not an exclusive. Pinel attributed every thing to the alterations of the solids: this doctrine prevailed until about ten years ago, when that of fluidism began to revive, and at that period the alterations of the blood, which to-day are duly recognised, were not admitted. Pinel rejected all the helps of chemistry, but this science, aided by the microscope, is now enlarging the field of our observations.

Every thing comes from the blood, and every thing is carried off by it, and as it is of great importance in physiology, so likewise its importance should be considered in pathology; but until this is confirmed by observation, we will not admit its influence into this science. Many theories have been advanced, but few facts have been established. It is very necessary that we should be well acquainted with the healthy state of the blood, before we can decide upon its alterations. We are still ignorant of the composition of the blood, for the theory which yesterday was looked upon as conclusive and convincing is to-day replaced by a new one. Those who study the microscope see with different eyes; their researches on the blood, like those of the chemists, differing greatly from each other. Another plausible objection which has been raised, is, that the blood which we examine in the cups is no longer

the same fluid which circulates in the living vessels: it is not necessary to resolve this problem, for all that is required is to find out if this blood is always the same, and if it is always identical, the alterations which it exhibits, represent those which existed in the living state. History is a prophet come back. Bordeu exclaimed against the chemists, who, by means of their science, explained the vital forces; the systems of chemistry of Kowelle and his contemporaries have been overthrown by that of Lavoisier, and, perhaps, it may come to pass, that the chemical theories which are received to-day will vanish in their turn; for can the chemist pronounce his science to be certain, when so many systems have been subverted? I can show you many facts in pathology, first established by Hippocrates, and which to-day are received as such, proving that the science of medicine contains many positive facts.

The alterations of the blood are of two kinds—in its quantity and in its quality. This latter is the most complex, as it may be changed in its visible properties, in its density, colour, &c.; which changes may be ascertained without the aid of instruments, but by the aid of the microscope we discover others. Alterations in the chemical properties must also be studied; for although we must admit the insufficiency of chemistry at present, yet it furnishes a certain number of positive facts. The blood of an animal affected with anthrax (charbon,) although, with all our means of examination, we can detect no alteration in its composition, injected into a healthy animal will cause its death.

Astruc divided the alterations of the blood into three classes.

In the first class he described the alterations in quantity, which may be increased or diminished. The second class, which he subdivided into three orders, comprised the alterations in its qualities.

1st Order.—Alterations in its physical properties, its consistency, thickening, coagulation, &c.

2d Order.—Alterations of the crassamentum and composition of the blood, by means of foreign particles, pus, miasmata, &c.; or alterations in the principles of the healthy blood, in its serum, fibrin, globules, &c.

3d Order.—Augmentation of its salts, &c.

In his third class he described those alterations resulting from a modification in the motion of the blood, which was either thus affected in its entire mass, or merely in the movements of its globules. This latter question is now attempted to be decided by the microscope.

What forms the subject of our investigation to-day, had also been the study of the ancient teachers.

1. *Alteration of the Blood as to Quantity.*

Any increase or diminution in the quantity

of the blood produces a change in its constitution: thus, if it be augmented, the blood becomes richer, and *vice versâ*. We can only tell by analogy and reasoning whether the quantity is increased or diminished; and by observing the phenomena which occur when this change takes place, physiology teaches us that the blood vivifies, gives colour, &c., and when we see all its functions increased, the tissues being more coloured than usual, we admit, by reasoning, that the blood which produces these effects is increased.

This condition constitutes plethora, or general hyperemia. If the sanguineous temperament be exalted, a state of plethora is induced. Formerly, four kinds of plethora were admitted.

1. Plethora ad molem, with respect to the mass of the blood.
2. Ad spatium, related to the space, the vessel being retracted, the blood not being increased.
3. Ad vires, the forces of the circulatory system being irregular.
4. Ad volumen vel spurium, related to the expansibility of the blood, occupying more or less space, depending upon nervous condition, &c.

Some cases occur in which the capillary vessels are more or less dilated, and in which the plethoric state is simulated, as in hysteria, and many other nervous diseases; and the same has been found even where the asthenic diathesis has existed; as also after great loss of blood, and in those cases where sanguineous congestions have been formed in different parts.

Is the density of the blood augmented in plethora? It is often very difficult to tell, by the appearance of the blood, whether it is changed in this character. In the plethoric state it presents a large clot, and its density and consistence are considerable; but this state of the blood may be found in a healthy person, and therefore these appearances do not furnish us with any pathognomonic signs. The blood drawn from plethoric persons, does not, in the great majority of cases, present a buffy coat, which is well formed, whitish, resisting, and of half a line in thickness; and if, after phlebotomy, the blood drawn does furnish a well marked buffy coat, it is probable that no plethora exists. Boerhaave thought that the blood of plethoric persons was thicker than that of healthy persons; but of this we have no sufficient proof.

Influences of Plethora on the Constitution.

1st. It may modify the symptoms of disease, and should also produce a modification in their treatment.

2d. It may produce several diseases.

3d. It may in itself constitute a disease.

1st Proposition.—Plethora was looked upon by the ancients as a state of inflammation, or

of general reaction. One of the effects of plethora is to produce local hyperemia or sanguineous congestion; but these latter may increase and become developed with the asthenic state, and will only be removed by such means as will cure the latter—as quinine, &c.

Hæmorrhages are sometimes brought on by a plethoric state. The suppression of the catamenia, by producing plethora, may be the cause of hæmorrhages, although these latter are not always connected with such a condition; as, for instance, apoplexy of the brain, which is seldom dependent upon plethora. I think it is a mistaken notion which supposes plethora as predisposing to inflammation; for, out of thirty cases of pneumonia, two are not produced by, or owing to, a plethoric condition. If out of ten persons exposed to cold, one escape an attack of pneumonia, that one will probably be of a plethoric temperament:

Certain diseases of the skin, such as boils, &c., seem to depend upon a plethoric state; and a cutaneous eruption sometimes appears in those in whom plethora has been induced by a suppression of the menses.

Second Proposition.—There are some morbid conditions in which the secretions are increased, which seem to depend upon hyperemia. Plethora, among other causes, produces an augmentation of the serum; giving rise to active dropsies, in which the vessels seem to be too full of blood, and which are relieved by blood-letting: if in living animals we distend the circulatory organs with water, absorption becomes diminished, and the transudation from the vessel increased: some serous exhalations seem to depend upon the quantity of blood in the vessels being increased. Plethoric persons perspire freely and constantly through the skin, and if this perspiration be checked, the skin becomes the seat of a pruritus, and symptoms of fever may show themselves, which will disappear when the perspiration is re-established: the urine of plethoric persons contains a quantity of uric acid, which forms a deposit of red particles, and their blood being very rich, we might suppose that nutrition would be greatly increased but we do not find this to be the case, although the heart is sometimes found hypertrophied. I do not believe, generally speaking, that plethora excludes the formation of tubercles and other morbid productions; but this rule is not without exceptions; if cancer becomes developed in a plethoric person, who is at the same time of a sanguineous temperament, it gradually destroys the state of plethora. Plethora also exercises certain influences over the nervous system in congestions of the brain and of the respiratory apparatus.

Third Proposition.—The plethoric state being exaggerated or increased to excess, may in itself constitute a disease in which all the

functions become deranged, and a fever is produced. I am of opinion, that plethora increasing to a state of excess, may cause fever in the same way as it may produce derangement of a single function; the fever thus taking place in a plethoric person, always assumes the inflammatory form, and requires blood-letting. This fever may be symptomatic of a phlegmasia of the heart or the vessels of the circulatory system, or may depend upon the over excitement of the organs by the blood, which is too rich, and may be designated hyperemic fever; it is short in its duration, and terminates favourably; the state of excitement being calmed by evacuations preceded by perspirations or by epistaxis, or hæmorrhage from the uterus or hæmorrhoidal veins, the blood by these means being diminished in its quantity or richness. Or it may terminate in another manner, the excitation being determined to a particular organ, which henceforth will constitute the predominant lesion: there are few phlegmasiæ which are not preceded by this inflammatory fever, succeeding or produced by an exaggerated plethora.

Causes of Plethora.—It may exist from birth, or become developed without any particular cause. There are some persons who make too much blood, others on the contrary make too little. We are ignorant of the natural cause of plethora: the different periods of life exercise a great influence over plethora: children are exempt from plethora, on account of the activity of their growth; a state of false plethora is common amongst them, on account of the delicateness of their skin, and this condition is styled lymphatisme. When the growth stops at the time of puberty, plethora frequently shows itself, constituting what is called accidental plethora, which may disappear in a short time. Old age seldom falls into a state of plethora; although from certain causes it may exist at this period of life, the plethoric state exists in a direct ratio with the activity of the functions which produce the blood.

Influence of Digestion.—The more abundant is the formation of chyle, the more likely is plethora to be produced; and it is frequently met with, associated with a great increased development of the respiratory apparatus. There are two varieties of old men—one who retain the appearance of youth, and whose lungs resemble those of younger men; and the other, who are decrepit, and whose lungs present enlarged cells, and in whom the organ of hematose is imperfect: persons of a nervous temperament generally have a quick pulse, and are not subject to plethora, and from this circumstance we may infer that the rapid circulation of the blood is not a cause of plethora. The palpitations of the heart, which are met with in plethoric persons, are the effect and not the cause of plethora: if the period at which men-

struation begins passes over without the appearance of the discharge, plethora is frequently induced: during the whole period of menstruation it may be produced by any suppression of this secretion, and the cessation of the menses may dispose to it, and it may likewise occur during pregnancy. Plethora shows itself in some individuals at the time of spring; and the acute diseases which occur at this period of the year require to be actively combated by blood-letting.

Anemia.

Anemia is that state which is opposed to plethora, and in which the vessels contain a lesser quantity of blood, which is of a deteriorated or impoverished quality. Some persons bear the loss of a large quantity of blood without falling into this state, whilst in others this condition is produced by the loss of a small quantity. Those of a nervous temperament, and particularly women, do not bear the loss of much blood, and having this in our recollection, when treating their diseases we do not carry our bleedings to the same extent as we would in other cases: hospital patients support bleeding better than those in private practice.

Age considered with respect to bleeding.—We meet with some cases when we must bleed, without taking into consideration the age of the patient. The state of anemia is easily produced in children under the age of six years, by large bleedings. Robust old men will bear large bleedings; but those whose lungs are, as it were, atrophied, and in whom the process of sanguification is feebly carried on, are easily thrown into this state, and large bleedings in them may be attended with the most fatal results. In such cases, the bleeding, if employed to arrest the inflammation, if pneumonia is the subject, will fail; the bronchial tubes become filled with mucus, and death takes place. This division of old men into these two classes will explain those different results which we find detailed by authors. The more rapid is the abstraction of blood, the more quickly is anemia produced.

In anemia the blood is altered in its physical properties, as well as in quantity. The proportions of water and serum are increased, and those of the fibrine and globules are lessened.

Causes of Anemia.—Some persons, without any cause to explain it, produce an impoverished blood, and present a condition of spontaneous anemia, characterized by paleness of the face, and all the symptoms of debility, without being affected with any organic disease, or having suffered the loss of blood. This state is more frequently met with in women than in men. Is there any difference between anemia and chlorosis? This latter affection is now considered as depending upon the uterus. A man who has lost much blood by hemorrhoids, will present all the symptoms of chlorosis. The blood of a chlorotic patient presents the same alterations as that of an anemic person. Anemia pro-

duced by an hæmorrhage, is cured by the same remedies as chlorosis. I look upon chlorosis as a state of spontaneous anemia more frequent among women, and met with not only amongst adult unmarried women, but also amongst married ones, and girls of seven years of age. Anemia may be produced accidentally by hæmorrhoidal discharges, prolonged abstinence, diseases of the lungs, and great efforts and expenditure of nervous influence. About twenty years ago, an epidemic anemia broke out amongst those employed in a mine in the south of France, and all those who were attacked by it presented the symptoms of chlorosis; its causes could never be ascertained, and it is the only case on record of the kind. Anemia may be produced by an unwholesome atmosphere; but the affection thus brought on is of an imperfect form.

Symptoms.—Anemia exercises a great influence over the intelligence, sensation, and the movements of the muscular system.

Effects on the Intelligence.—Delirium sometimes follows large bleedings; the brain being imperfectly excited by impoverished blood, produces disorders of the intelligence, and the delirium thus produced has been well described by Marshall Hall, who mentions thirty cases which were treated by brandy and beef-tea.

A comatose state, putting on the symptoms of inflammation of the brain, may be connected with a state of anemia;—when persons are recovering from an illness which has brought them to the verge of the grave, and after great debility are beginning to retrieve their strength, their intelligence becomes disordered, and a real state of mania becomes developed. [A case was related of a woman recovering from peritonitis, who was effected with delirium during her convalescence, which was prolonged for six months, at the end of which time her forces having returned, her reason again became sound, her blood at this time being produced richer in quality.]

Effects of Anemia on Sensation.—In a number of cases the sensibility increases as the blood becomes impoverished; the skin becomes more irritable and sensible; sounds strike painfully on the ear, odours are disagreeable, and light hurts the eyes. These symptoms disappear when the state of anemia ceases. Total abstinence prolonged brings on anemia, with total loss of the sight, preceded by a state in which the sense of vision becomes exalted. This kind of amaurosis is followed by death, and dissection discovers no lesion of the brain, which is merely found paler than natural. [Case cited in which there was loss of sight produced by a fright, which caused a shock to the nervous system.] Vertigo, head-ach, singing in the ears, &c., are produced by anemia, and in some cases it is impossible to distinguish the symptoms of anemia of the brain from those depending upon hyperemia of that organ. [Case related of a man who had

been repeatedly bled for symptoms which were referred to a cerebral congestion; in consequence of this treatment he became very nervous, pale, and sunken; his sight became affected, his digestion deranged, and his functions disordered. By the gradual exhibition of tonics all these symptoms were in time removed.]

Contractility affected by Anemia.—Great weakness of the muscular system in chlorotic females is often the first symptom of anemia, and this debility seems to depend upon the blood containing less fibrine. We sometimes meet with cases of convulsions, in which the muscular system is in a state of exaltation. Animals who die of hæmorrhage die convulsed, and in children convulsions are produced by leeches or by chronic disease, and lying-in women are often thus affected after floodings. Young females, who are pale and chlorotic, are often affected with chorea. Subsultus tendinum is another example. These are all proofs that convulsions exist in connection with anemia, or an impoverished condition of the blood.

[Case of tetanus cited, which came on after an hæmorrhage.]—*Lon. Med. Gaz.*

UNIVERSITY COLLEGE HOSPITAL.

Cases of Simple and Malignant Tumour of the Lower Jaw.—Ellen H., aged 19, was admitted January 29, 1840, under the care of Mr. Liston. She is a country girl, and has always enjoyed good health. Is quite sane. She did not suffer from toothache previous to the commencement of her present disease. She had no decayed teeth on the right side of the lower jaw. Six years ago she perceived a trifling swelling of the gum, at the end of the jaw; there was a small abscess, and some discharge. The tumour has continued to increase up to the present time; there has always been some slight discharge into the mouth. As the tumour increased, the teeth were removed. She suffered a good deal of pain in the jaw before the tumour commenced; since that time, however, she has experienced little pain, except when she has caught cold. On admission, there is a tumour situated on the right side of the inferior maxilla, extending from the canine tooth to beyond the angle of the jaw. The tumour is the size of a man's fist. It is hard, and evidently of a fibrous character. Not painful on pressure. The glands of the neck not enlarged. Her general health is quite good. The three last molar teeth in the lower jaw have been extracted, and their situation is occupied by a red mass of the consistence of gum. Catamenia quite regular; bowels open. Mr. Liston considered the tumour to be a good specimen of the fibrous kind, and that therefore it could be removed with safety. He determined to operate.

Feb. 7. The operation was performed to-day.

The patient being seated in a chair, Mr. Liston extracted the lateral incisor of the right side; with a strong, straight bistoury he made an incision, commencing a little above the angle of the jaw, continuing under it to opposite the lateral incisor, then turning upwards towards the mouth, terminating about an inch above the chin; the flap of the integument was raised, and keeping the blade of the knife towards the lower jaw, the muscles were separated at that part where the tooth had been extracted, until the fore-finger could be passed into the mouth. The jaw was then partly sawn through with Hey's saw, and the division completed by the cutting pliers. The jaw being then pulled outwards, the tissues in connection with the tumour at its base were dissected off. The tumour was then firmly grasped, and with the whole substance of the bone, depressed, for the purpose of getting at the articulation; in doing this the bone gave way, and the operator, not having sufficient leverage to suppress the jaw well, experienced some little difficulty in separating the temporal muscle from its insertion. The incision had also been made very low, in order to avoid injuring the branches of the portio dura; this, also, increased the difficulty of dividing the upper attachments of the jaw. In a short time the temporal and masseter muscles were separated from the jaw; the articulation was partly opened, when, in more firmly pressing it, the bone again gave way, leaving the condyle still attached. By seizing this portion of the bone with a sequestrum forceps, it was soon removed. The operation lasted eight or nine minutes, and was borne by the patient with great fortitude. The difficulties of the operation were much increased by the attenuation of the tables and the brittleness of the bone, and its having been twice broken, together with the lowness of the incision, which, although it increases the difficulties of the operation, should always be imitated, since it prevents paralysis, in a great measure. On examining the tumour, it was found to extend as far as the canine tooth on the right side, apparently of a fibrous character in that situation. Near the angle the bone was much expanded, and extremely thinned; this expansion and thinness extended as far up as the condyle, where, also, the bone was much thinned, and filled with a brown, glairy fluid. Previous to the operation, it was not suspected that the tumour extended beyond the angle. This was therefore a case showing the necessity of extirpating the bone from its articulation, inasmuch as considerable disease may extend upwards without much altering the external appearance of the bone. Two harelip pins united the wound in the anterior of the chin, with twisted suture. Ligatures were placed on the facial, transverse facial, and two branches of the internal maxillary. The wound was filled with wet lint, and the patient placed in bed. Little blood was lost during the opera-

tion. Eight hours after the operation, reaction came on. The wound was united with three points of suture and some strips of insinglass plaster.

8. She has passed a tolerably comfortable night, though complaining of some pain in the head; has slept several hours; not much fever; pulse 90, not very full. Wound appears to be uniting. The pins and two sutures were removed. To have milk and water.

9. Much the same: going on well; wound entirely united; pulse 100; some little fever and thirst.

10. Passed rather a restless night; complains of pain in the head; feels very weak; cheek somewhat flushed; pulse 100; rather full; skin hot; bowels not open: to have an enema. This produced copious evacuation.

22. Has been going on well since last report. The wound is perfectly healed, and there is very little disfigurement of the face. There is some œdematous swelling on the side where the jaw was removed, but the wound inside and outside the face has completely closed. She suffers no pain; her health is good; she has, in fact, recovered, without the occurrence of a single bad symptom. She has for the last week been wearing an apparatus, to supply the deficiency arising from the removed bone.

March 2. She caught a slight cold a few days since, which was relieved by saline medicine.

10. Discharged cured. To return in three weeks, to have a new apparatus for the mouth.

Case 2.—John N., aged fifty-one, was admitted March 24, under the care of Mr. Liston. He is a mechanic. Always enjoyed good health, until the occurrence of the present disease. Had suffered from the toothache, and almost all his teeth were rotten. Seventeen weeks ago he suffered great pain in the last molar but one, and this was followed by some swelling of the gum at the base of the last molar. The swelling increased rather inwards than outwards. From this a tumour commenced, which has continued to increase up to the present time.

He has had no discharge of any consequence from the tumour; he suffered pain in it at the commencement of the disease, but it is now free from pain.

On admission his general health was good. He had a tumour about the size of two fists, extending from above the angle of the lower jaw, on the right side, to near the symphysis, on the same side; proceeding upwards, and becoming moulded on the upper jaw, it extended into the mouth.

The tumour is soft and elastic, but not ulcerated on any part, neither is it liable to bleed; it is unaccompanied by discharge.

Malignant Tumour of the Lower Jaw.

James S. was admitted March 26. He had

been some years ago accustomed to smoke a short tobacco-pipe, more particularly on the left side of the mouth; this produced some ulceration of the lip, while increasing cancer was the result. He suffered from this for ten years, at the end of which time a portion of the lip was removed, together with the disease. At this time, a year ago, there was a slight swelling underneath the chin, and this has gradually increased up to the present time.

On admission he had a large tumour situated under the centre of the chin, firm and hard, somewhat elastic towards its apex, and of the size of the fist. It had at the apex an ulcerated point, of the size of a sixpence, which bled occasionally when touched. The tumour is firmly adherent to the chin, and the bone seems somewhat enlarged. The skin over it is discoloured, reddened, and firmly adherent. The tumour is very painful at all times, more particularly at night, and when touched. Mr. Liston refused to operate on this case.

In some clinical remarks on the two latter cases, he observed that they afforded the opportunity of showing malignant cases of tumour of the lower jaw, and contrasted well with those cases which had been previously operated upon in the hospital. In the second case the tumour had grown exceedingly rapid, having commenced only seventeen weeks ago. The skin covering it was firmly adherent to it, and ulcerated in several places. Within the mouth was a large fungous growth, which bled when it was touched; and from the history of the case it appeared that the disease commenced in the soft parts.

There could be no doubt that tumours of a much more doubtful nature might be removed from the lower than the upper jaw. In the upper jaw, if the tumour were at all "malignant"—it might commence under, at an early period, extend into the sphenoidal or ethmoidal cells, and could not be extirpated with safety to the life of the patient. In the lower jaw, where the tumour was confined to the bone, it could be entirely removed, the bone being sawn through wide of the disease, and removed at the articulation. It was not the size of the tumour in the case under consideration, but its character, which determined him from operating. From the skin being so extensively involved in the disease, it would be hardly possible to remove the whole; at any rate, the operation would be such that the patient would probably sink under it, though the disease could be completely extirpated. It could not be expected that the patient would remain free from disease. Under these circumstances, any operation, the slightest, could not be justified.

In the second case, the disease was of a different nature. Its history showed it to be cancer of the lymphatic glands beneath the jaw. The man had originally a cancerous affection of the lip; this had been removed,

the lip healed, the cicatrix was quite firm, and there appeared but little disease in the part; the affection, however, had exhibited itself in the lymphatic glands. This was by no means an uncommon occurrence. Patients affected with cancerous diseases had operations performed for their removal; the wound healed, the patients appeared quite well, and the cicatrix remained firm. This state might continue for two or three years, but during that time it would seem as though the seeds of the same disease were laying dormant in the lymphatic glands leading from the previously affected part; and, perhaps, after the lapse of some years, the patient would perish from the development of cancer in these glands. The glands had become affected in this case.

HOSPITAL BEAUJON.

Fall from a height of thirty feet.—Extensive injury of the vertebral column.—Application of the Trephine.—Death.—On the evening of the 6th of March, 1840, was brought into the Wards of M. Langier, at the Hospital Beaujon, a man aged 25, who, together with a fellow-workman, had fallen from a third story on his back.

At the morning visit, on the 7th, he gave the following account of his accident:—The plank on which he had been standing had given way, and he, with his comrade, was precipitated from a height of thirty feet. During his fall he turned over once or twice, and struck against some projecting pieces of scaffolding, and finally fell on a heap of stones on his back. He became insensible, his comrade had fallen upon him, and had escaped with simply a severe sprain of one of his ankles.

The patient was laying on his back, with the usual symptoms of injury of the spinal marrow; total loss of sensibility and movement of the lower extremities, extending upwards as far as the umbilicus; retention of urine and fæces; pain along the spine; pulse full, rather quick; countenance anxious; pain in epigastric region, on breathing deeply; respiration rather quicker than natural; thirst, &c. On passing the finger along the spine, a depression, with slight sensation of crepitation, was felt, apparently, between the seventh and eighth dorsal vertebræ. The skin over the part and back generally showed no signs of contusion.

Venesection to sixteen ounces; quietude; position on the back to be retained, and urine to be drawn off twice a-day.

On the 11th, five days from the accident, the symptoms were in no degree alleviated. Loss of sensibility and motion; retention of urine and fæces, as before. The respiration still continued hurried, and the buttocks and heels were inflamed, and a slough had begun to form on the sacrum, although no passage of fæcal matter had taken place; the abdomen was soft and tender, and not distended with gases.

M. Langier determined to apply the trephine,

and by making an opening into the vertebral canal, to attempt to remove the pressure on the marrow, whether depending on depressed bone, or effused fluid. From an external examination, it seemed impossible to ascertain the actual extent of the injury, or the immediate cause of the symptoms; but M. L. judged the operation advisable, as the "*remedium anceps*" in a case otherwise mortal.

Operation.—The patient being placed on the side, almost reclining on the face, an incision, from three to four inches, was made along the mesial line, opposite the depressed spot, and the dorsal muscles were cut through, and detached on each side from the spinous processes, which were thus completely exposed. The spinous process of the ninth dorsal vertebra was found to be broken off, and was easily dissected out, bringing with it a portion of the posterior arch: thus, a small aperture was made in the vertebral canal, but it was not judged sufficient; a small trephine was then placed on the base of the spinous process of the vertebra below, or the eighth, and the circular portion of bone removed; an opening, large enough to admit the fore finger, was thus formed, and the medula, covered by its theca, exposed, which, as far as could be ascertained, appeared uninjured. No depressed portion of the bone could be felt, but some blood escaped from the canal. It being evident that nothing further could be done, the wound was simply dressed with a piece of linen, smeared with cerate, and the patient was again laid on his back, so as to facilitate the escape of fluids, if any such existed in the canal.

The operation, which, according to some authors, is extremely painful and difficult, was easily and rapidly performed; the sufferings appeared slight, and little blood was lost, no vessel requiring ligature.

12. At the morning visit, we found the patient laying on his right side; he told us that about two hours after the operation, his respiration had become more free, and the pain caused by inspiration less; but that, in the middle of the day, he had been seized with a severe convulsive attack of coughing, which had lasted all night; towards the evening this had become so distressing, with pain running round the chest to the wound, that mustard poultices were applied to the legs, and had produced some relief; their presence had excited a sensation of warmth in the legs, but no smarting or pricking was felt; also, towards evening, the introduction of the catheter having been neglected, the pain and weight in the pubic region, from distention of the bladder, with desire to void the urine, had been felt, but the subsequent introduction of the catheter had excited no sensation; he had had some disturbed sleep during the night. This morning his state is—face flushed; skin hot, but moist, tongue dry, furred, with redness at the tip; pulse rapid, 128 pulsations, depressible; no

rigours; respiration somewhat easier and freer; abdomen slightly inflated; no passage of faecal matter, but of wind expelled with force; urine high-coloured, but neither turbid nor ammoniacal.

On first inquiry into the state of sensibility in the lower extremities, some amelioration was thought to have taken place, but, after repeated and careful investigation, this turned out to be merely the effect of over-anxiety on the part of the patient, who deceived himself into the belief that he had recovered somewhat the sensibility of the parts: power of motion null, as before; the extremities were warm, and a slight degree of redness had been produced by the mustard poultices.

Fifteen leeches to the back, in the neighborhood of the wound; to drink freely, and some broth to be given.

13. We found the patient this morning in a great state of excitement; face turgid; hurried respiration; quick, small, wiry pulse, 130 pulsations; great thirst; pupils dilated; skin hot, dry; voice low, but distinct: the account given was, that he had again been attacked with a severe fit of coughing, which continued through the night, and was attended with sharp dragging pains over the chest, radiating from the wound; he had also experienced a sharp attack of rigors, with vomiting and headach; some faecal matter had passed involuntarily, and a second attack of rigors, which came on in the evening, he attributed to exposure whilst the nurses were cleaning him; just before the visit this morning he had another involuntary discharge of dark-coloured, foetid faeces; the buttock was not only inflamed, but a slough had formed; the wound looked well; considerable quantities of sero-sanguinolent fluid had escaped from it.

14. General appearance and symptoms much worse; respiration more hurried and oppressed, diaphragmatical; 130 to 140 pulsations; had a severe attack of rigors yesterday, and another this morning; has been delirious and agitated during the night, tossing his arms about; has a severe hacking cough, with a kind of a hiccup, or convulsive action of diaphragm, with little sound; belly soft; the meteorism, described by authors as a constant symptom, does not exist, nor is the urine ammoniacal.

These symptoms increased during this and the following day, on which he died, at nine in the evening, five days from the operation.

Post-mortem Appearances.—Fracture, without displacement, but comminuted, of the posterior arches of four dorsal vertebrae, from the sixth to the ninth inclusive; or, rather, a double fracture running on each side, at the junction of the articular processes with the roots of the spinous, which were thus completely separated. The spinous process of the seventh, as before mentioned, had been removed in the operation. The perforation made by the trephine in the base of the eighth, occupied

exactly the space between the oblique processes, but in no way interested their articulations. No depression of the posterior arches existed. On laying bare the medulla, with its theca, considerable quantities of dark, coagulated blood, mixed with pus, was found laying on the latter, between it and the posterior arch of the canal, extending for an inch or more above and below the perforated spot. The vessels of the theca were gorged with blood. The medulla was found completely disorganized, transformed into a creamy substance to a considerable extent above and below; and opposite the eighth dorsal vertebra its continuity was completely destroyed. Vessels of the medulla also gorged, but no extravasation of blood between it and its theca. The body of the eighth dorsal vertebra was broken into fragments, some projecting into the canal and compressing the marrow. The body of the seventh was also fractured longitudinally, simply a fissure without displacement; the intermediate cartilage had nearly disappeared. The ninth rib on the left side was also fractured, at the distance of an inch from its articulation with the spine. There was no wound of the pleura, but the pleural sac of the same side was found inflamed, with considerable sero-sanguinolent effusion, and the left lung inflamed and hepatized.—*Lon. Lan. April, 1840.*

Case of Prolapsus Ani, Cured by Actual Caution. By JOHN SCOTT, Esq.—Nattoo Milarsett, goldsmith, was brought to the Poor Dispensary on the 8th of November, 1837. He stated that he had been for some years subject to a prolapsus of the rectum, coming down with every stool, yet easily reducible by the hand after it; that five days ago, the protruded part had become much larger, and since then he had not been able to return it.

The tumor was about five inches in length, and about twelve in circumference, bulging over the verge of the anus, and conical towards the extremity. Considerable ulceration had taken place on the surface, which, in general, was of a darkish red appearance, and in some parts covered with a superficial black slough.

His body was amaciated, and his constitution apparently much debilitated by the disease. On admission, his bowels were confined, and he complained of difficulty in passing his urine, for which he was ordered some castor oil and nitric æther.

For some days, cold lotions were applied to the tumor, and his bowels kept open with castor oil. Leeches, also, were several times applied to the verge of the anus, and once to the tumor, when it appeared swollen and inflamed; a bitter infusion was given to support the strength. As the difficulty in passing his urine occurred, with occasional pain over the pubis, a saline mixture was exhibited, which relieved this, and kept the bowels free.

All attempts to reduce the tumor were inef-

fectual; and as it did not seem to be at all diminished in size after thirteen days, it became necessary to try other means to relieve the man from a disease which incapacitated him from earning his livelihood, and was gradually exhausting his strength.

On the 21st of November, a fire spatula, heated to as intense a red heat as could be managed, was passed rather quickly over the whole surface of the tumor. In the cases referred to, it is said, the iron was brought to a white heat, but this the means at hand did not admit of. The pain during the operation seemed greatly less than was anticipated; the patient rested on his knees and elbows, so as to present the buttocks, without being held. Simple dressing was applied after the operation, and no unpleasant symptoms followed; the only new one complained of was a feeling of straining at stool. The difficulty in passing urine continued with the pain over the pubis; but both were relieved, and his bowels kept free by the saline mixture.

The tumor at first appeared shrunk, but could not be reduced; the ulcers on the surface healed, and there was a considerable watery discharge for a day or two from the surface. There having been no success, and the patient having suffered so little from a first attempt, the cautery was again applied on the 20th, and to do it more effectually, two irons were used, the second being taken when the first became black. On this occasion there was a striking proof of how much the appearance of severity in the remedy differed from the reality of it; for, after both irons had been used, the man pointed to a part of the tumor which had been less cauterised than the rest, and desired that the iron might be re-applied, probably from the effect the cautery had in reducing the irritation arising from the large exposed surface.

Little or no change was produced on the tumor by this second attempt, but still no unpleasant symptoms followed; the patient continued in every way much the same till the 14th of December, when the cautery was again applied. One iron only was used this time, but more slowly and forcibly; on this occasion, too, the man applied for a re-application of the iron. A greater change immediately followed this application than either of the former; the tumor became more shrunk, both in length and diameter, than it had before done, and continued so. On the 16th the man desired leave to go home and return, which he did; and on the 17th he again went out, but did not return. Up to the 6th of January he has had no return of the prolapsus.

The above case shows with how much safety so formidable a remedy as actual cautery may be applied to the protruded gut, and may induce others to attempt to cure, in the same manner, this loathsome disease, which is not uncommon, I believe, in this country.—*Trans. of Med. and Phys. Society of Bombay, vol. ii.*